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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,062	12/09/2003	Bruno De Man	133643-1/YOD GERD:0071	3735

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EXAMINER
SONG, HOON K

ART UNIT	PAPER NUMBER
2882	

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-8 and 10-27_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-8 and 10-27_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _09 December 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)   Paper No(s)/Mail. Date _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Specification

The specification is objected to as failing to provide proper antecedent basis for

the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction

of the following is required: "the weight measure is derived from the measured sinogram

data" is not described in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of
> making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the
> art to which it pertains, or with which it is most nearly connected, to make and use the same and shall
> set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8, 10-13 and 24 are rejected under 35 U.S.C. 112, first paragraph, as

failing to comply with the written description requirement. The claim(s) contains subject

matter which was not described in the specification in such a way as to reasonably

convey to one skilled in the relevant art that the inventor(s), at the time the application

was filed, had possession of the claimed invention. The original specification does not

descries "the weight measure is derived from the measured sinogram" rather describes

the weight measure is derived based on the measured sinogram", and one skilled in the

art would not understand how to generate the corrected sinogram data and the weight

measure both from the measured sinogram data in order to generate improved

sinogram data. For examination purpose the examiner considers the phrase as "the

weight measure is derived based on the measured sinogram data"

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by

Yamada et al. (US 6426988B2).

Regarding claims 1, 14 and 24-27, Yamada teaches a method, a processor or

computer readable medium for reducing artifacts in image data generated by a

computed tomography system, the artifacts being due to the presence of a high-density

object (M) in a subject of interest, comprising:

receiving measured sinogram data (f(P)) from the computed tomography system,

the sinogram data representative of a plurality of sinogram elements (column 8 line 13-

30, column 12 line 41-47);

reconstructing the measured sinogram data to generate initial reconstructed

image data (column 12 line 48-58);

generating corrected sinogram data using the measured sinogram data (column

9 line 25-30);

assigning a weight measure to each sinogram element in the corrected sinogram

data, wherein the weight measure is derived based on the measured sinogram data (the

measured projection data f(P) and the estimated projection data $F(b_k)$ are compared

with each other to derive comparison reference image and the comparison reference

image d_k is weighed according to a length where x-rays pass through the high absorber

area to thereby derive a weighted comparison reference image e_k, column 8 line 59-64

and pixel values of the measured projection data $F(b_k+1)$ in the portion L where x-rays

pass through the high absorber area is replaced by the pixel values according to the

overwritten estimated projection data $F(b_k+1)$ to correct the measured projection data

$f(P)$ and derive or obtain a corrected projection data $F(P_2)$ (column 9 line 19-30)); and

iteratively reconstructing the corrected sinogram data to generate improved

reconstructed image data based on the weight measure associated with each sinogram

element (column 18 line 1+).

Regarding claims 2 and 15, Yamada teaches generating corrected sinogram

data using the measured sinogram data comprises using a projection completion

technique (column 17 line 13-30).

Regarding claims 3 and 16, Yamada teaches generating corrected sinogram

data further comprises identifying a trace of the high density object in the measured

sinogram data; and correcting the measured sinogram data in the trace of the high

density object (column 13 line 1-18).

Regarding claims 4 and 17, Yamada teaches identifying a trace of the high

density object comprises:

segmenting the high density object (M) from the initial reconstructed image data

(figure 1, column 13 line 1-3);

reprojecting the segmented high density object from the initial reconstructed

image data to generate reprojected sinogram data (F image in figure 1); and

identifying a trace (L) of the high-density object based on the reprojected

sinogram data (column 13 line 21-28).

Regarding claims 5 and 18, Yamada teaches identifying the trace of the high-

density object comprises comparing each sinogram element in the measured sinogram

data to a pre-defined threshold value (column 13 line 32-37).

Regarding claims 6 and 19, Yamada teaches identifying the trace of the high-

density object comprises assigning a reliability measure to each sinogram element in

the measured sinogram data (column 13 line 1-3).

Regarding claims 7 and 20, Yamada teaches correcting the measured sinogram

data is performed using an interpolation technique (column 16 line 24).

· Regarding claims 8 and 21, Yamada teaches correcting the measured sinogram

data is performed using techniques selected from the group consisting of consistent

completion techniques, spline based completion techniques, iterative correction

techniques and non iterative correction techniques (column 14 line 28).

Regarding claim 10, Yamada teaches the weight measure is derived based on a

relative position of each sinogram element with respect to the trace of the high-density

object (column 15 line 17).

Regarding claim 11, Yamada teaches the weight measure is derived based on

simulated sinogram data (column 12 line 59).

Regarding claims 12 and 22, Yamada teaches the initial reconstructed image

data is generated using a filtered back projection technique (column 10 line 59).

Regarding claims 13 and 23, Yamada teaches iteratively reconstructing the

corrected sinogram data to generate improved reconstructed image data is performed

using techniques selected from the group consisting of maximum likelihood (ML)

techniques and maximum a posteriori (MAP) techniques (column 2 line 40).

Response to Arguments

Applicant's arguments filed 3/24/2005 have been fully considered but they are

not persuasive.

The applicant argues that Yamada reference fails to teach the weight measure is

derived from the measured sinogram data. But the examiner disagrees.

Yamada teaches the measured projection data f(P) and the estimated projection

data F(bk) are compared with each other to derive a comparison reference image d_k

based on the back projection of a difference or ratio between both data (column 8 line

57-67) and a weighted ART/EM method includes processes from derivation of the initial

projection data $F(b_0)$ to the overwriting to the estimated image b_{k+1}, and the overwritten

estimated image b_{k+1} is forward projected to obtain an overwritten estimated projection

data $F(b_{k+1})$ (column 9 line 19-30) and the pixel values of the measured projection data

$F(b_k+1)$ in the portion L where x-rays pass through the high absorber area is replaced by

the pixel values according to the overwritten estimated projection data $F(b_k+1)$ to correct

the measured projection data f(P) and derive or obtain a corrected projection data $F(P_2)$.

Thus the weight measure is derived based on the measured sinogram data (column 9

line 19-30) and Yamada clearly teaches the corrected sinogram data is iteratively

reconstructed to generated improved reconstruction image data based on a weight

measured associated with each sinogram element where the weight measured is derived based on the measured sinogram (column 18 line 1+). In view of the foregoing discussion, the examiner respectfully submits that Yamada teaches each and every element as set forth in independent claims and accordingly, Yamada anticipates the claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is (571) 272-2494. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272 - 2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

HKS

6/11/05
HKS

DAVID V. BRUCE
PRIMARY EXAMINER